

IN THE CLAIMS

1. (Previously Presented) A device for producing a plasma in a chamber comprising means for producing an energy in the microwave spectrum for the excitation of the plasma, said means comprising at least one basic plasma excitation device comprising a coaxial applicator of microwave energy, of which one end is connected to a production source of microwave energy, the other end being directed to the gas to be excited within the chamber, wherein each basic excitation device is arranged in the wall of the chamber, each applicator comprising a central core which is substantially flush with the wall of the chamber, the central core and the thickness of the wall of the chamber being separated by a space coaxial with the central core, this space being completely filled at least at one end of each applicator with a dielectric material such that said material is substantially flush with the level of the wall of the chamber.
2. (Previously Presented) The device as claimed in claim 1, wherein the dielectric material is refractory.
3. (Previously Presented) The device as claimed in claim 2, wherein the dielectric material is made of an alloy of silica and/or of aluminum nitride and/or of alumina.
4. (Previously Presented) The device as claimed in claim 1, wherein the dielectric material fills the entire coaxial space.
5. (Previously Presented) The device as claimed in claim 1, wherein the length of the dielectric material is equal to an integral number of half-wavelength of the microwaves in the dielectric material.
6. (Previously Presented) The device as claimed in claim 1, further comprising o-rings inserted between the dielectric, the central core of an applicator and the internal wall of the applicator.

7. (Previously Presented) The device as claimed in claim 6, wherein each O-ring is embedded in the internal and external walls of the coaxial structure.
8. (Previously Presented) The device as claimed in claim 1, wherein a central core terminates in a permanent magnet encapsulated in the central core and flush with the walls of the chamber.
9. (Previously Presented) The device as claimed in claim 1, further comprising a dielectric plate that extends to the interior of the chamber on the internal wall thereof, said plate completely covering the plasma excitation devices.
10. (Previously Presented) The device as claimed in claim 1, further comprising means for cooling each applicator in the chamber walls.
11. (Previously Presented) The device as claimed in claim 1, further comprising means for cooling the applicators in the central core of each applicator.
12. (Previously Presented) The device as claimed in claim 1, wherein the pressure of the plasma is between a value of about 1 millitorr and a value of about a few tens of torr.
13. (Previously Presented) The device as claimed in claim 1, further comprising a plurality of applicators, the applicators being arranged in a two-dimensional network in the wall of the chamber in order to obtain the desired applicator density for a desired pressure range.